PATENTS
112055-0065U
17732-66710.00

IN THE SPECIFICATION:

Please replace the second full paragraph of specification page 1 with the following replacement paragraph:

The present invention relates to fuel cell power systems and more particularly to MEMS (microelectronic mechanical ~~systems~~)systems) based fuel cell structures on the chip with integrated functional power conditioning circuitry for converting, conditioning and regulating the output power.

Please replace the forth full paragraph of specification page 2 with the following replacement paragraph:

However, there is a continuing need to reduce the size, while providing higher power densities, of power systems for use in portable and the ever smaller computers and recreational and business electronics. Consistent with these ~~needs~~ needs, an objective of the present invention is to utilize a variety of electronic devices including switched mode or linear power supply circuitry for providing practical fuel cell power supplies in small packages with high power capabilities.

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Please replace the first full paragraph of specification page 4 with the following replacement paragraph:

In yet another preferred embodiment, parts of the power converting, conditioning and controlling functions are constructed on a separate assembly or separate integrated circuit which also ~~has~~ has first electrical contact points. The integrated power system is then configured with electrical contact points corresponding the first ~~electricalcontact~~ electrical contact points, such that the at least one assembly can be mounted onto the chip and electrical connections made between the chip and the separate assembly or integrated circuit without using additional discrete electrical wires.

Please replace the first full paragraph of specification page 5 with the following replacement paragraph:

———FIG. 2A shows, in cross section, the fuel cells 4, the controller functions 6 and 8 for the switching power supply and conditioning circuitry. The assembly of FIG. 2A shows the contact area for power integrated circuitry on the top side 20 of the chip, the "top" side is defined above. In this ~~instance~~ instance, the connections between the fuel cell array 4 and circuit components integrated 22 are made by etched runs or grown layers within the chip. An integrated or even discrete circuit 24 may be mounted to the base chip 2. The item 24 might contain the conversion, regulation and control circuitry 6 and 8 (FIG. 1) while the power transistors ~~10(FIG. 1)~~10 (FIG. 1) may be formed in the

integrated area 22. In another embodiment, not shown, the conversion, regulating and control circuitry may also be formed within an integrated area on the chip.

Please replace the second full paragraph of specification page 5 with the following replacement paragraph:

FIG. 2B shows another embodiment of the invention where the power transistors 10 are built onto the integrated ~~circuit~~ circuit, but where the power transistors extend through the chip to the underside or substrate side 26. In this ~~case~~ case, with the contact area for power circuitry on the bottom side ~~22~~ 22, a much larger area is available to support higher current densities and power dissipation.

Please replace the first full paragraph of specification page 6 with the following replacement paragraph:

The feedback data path between the load sensing elements in the power conditioning circuitry (associated with a switching mode power circuitry, SMPS) and the fuel cell controller allows a system closed loop feedback approach which is consistent with existing power supply load matching capabilities. The load sensing element may be a current mirror MOS transistor pair with one in the current line to the load and the mirror in the controller. The mirror transistor may be constructed (via channel width/length) as known

in the art to provide a mirror equal to the load current or a mirror that is smaller or ~~larger~~ larger.